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The Changing Climate for United States Law

David M. Driesen
Syracuse University. College of Law

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Just a few years ago, the subject of American climate change law would not merit an article like this one, let alone the book that the American Bar Association has recently published on the subject.[1] *But the United States has changed, at least somewhat. At the moment, most important United States climate change law consists of state and local law, but there are signs that the federal government may create significant climate change law as well, at least after President Bush leaves office.*[2]

This article has two goals. The obvious one is simply to describe some of the American climate change law's more important aspects. The second goal involves raising some questions about the dominant neoliberal approach to climate change in the United States, an approach that has heavily influenced the Kyoto Protocol and the law of countries implementing the Kyoto Protocol.[3] *I mean by this an approach that basically treats climate change as an economic problem, rather than as a legal problem of how to address an environmental crisis. Economics, of course, has something important to contribute to climate change law. But U.S. policy-makers have exhibited an unfortunate tendency to apply free market worship, rather than careful legal analysis informed by economics and other disciplines, to address climate change. I will only have space here to introduce these considerations briefly as I describe some key United States programs.*

I. Federal Law

President Bush repudiated the Kyoto Protocol on economic grounds, finding that implementing the relatively modest reductions called for would be too burdensome for the American economy.[4] Such a stance stands in sharp contrast to President Reagan's position on ozone depleting chemicals, which assumed that once grounds existed to think that an international environmental problem was serious, we should address it vigorously if doing so was feasible. Under Reagan, the United States led the world to an agreement phasing out the principle ozone depleting chemicals. President Bush also denounced the Kyoto accord for not including developing country commitments to emission reductions,[5] thereby ignoring a justice principle the United States had agreed to when it ratified the United Nations Framework Convention on Climate Change,[6] the principle of common but differentiated responsibilities.[7] This principle implicitly recognized that in light of developed countries' historical

* David Driesen is the Angela S. Cooney Professor of Law at Syracuse University College of Law, Syracuse, New York.

1 See Gerrard, Michael B. (ed.), Global Climate Change and U.S. Law, Chicago, Ill., 2007 (hereinafter U.S. Law). Cf. Engel, Kirsten H. & Saleska, Scott R., Subglobal Regulation of the Global Commons: The Case of Climate Change, 32 Ecology L. Q. 2005, p. 183, at p. 215 (arguing, just a few years ago, that most state and local laws did not aggressively reduce greenhouse gas emissions).

2 U.S. Law, supra note 1, at p. 1.

3 See Driesen, David M., Sustainable Development and Market Liberalism's Shotgun Wedding, 83 Indiana L. J., 2007 (forthcoming) (explaining that environmental benefit trading came into the Kyoto Protocol at the United States' behest).

4 See U.S. Law, supra note 1, at p. 19 (stating that President Bush repudiated the Kyoto Protocol, because it would seriously damage the economy). I characterize the Kyoto reductions as "modest," because they are a small portion of the reductions necessary to avoid dangerous climate change. I make no claims here about whether achieving Kyoto targets would be difficult or not. Because U.S. emissions rose substantially after 1990, realizing a 7 % cut in emissions would require a much larger cut below current levels.

5 Id.

6 29 May 1992, U.N. Doc. A/AC.237/18 (1992), 31 I.L.M. 849 (hereinafter FCCC). See generally Bodansky, Daniel, The United Nations Framework Convention on Climate Change: A Commentary, 18 Yale J. Int'l L. 1993, p. 451.

7 FCCC, Art. 3, sec. 1.

responsibility for climate change and their superior capabilities in evolving technologies to address it, developed countries would have to reduce greenhouse gas emissions before developing countries did so.[8] Thus, President Bush, perhaps unwittingly, reflected a market-oriented perspective and repudiated legally enacted principles of justice. Consistent with the idea of free market worship, he has continued to rely on ineffectual voluntary measures to address global climate change and U.S. greenhouse gas emissions have continued to rise.[9]

This year, however, may have marked a turning point in the federal stance toward climate change. The Supreme Court decided its first global warming case, Massachusetts v. EPA.[10] While the Court's decision in this case seems rather narrow from a legal perspective, it carries enormous symbolic significance. The Court held that greenhouse gases constitute pollutants under the Clean Air Act.[11] As such, EPA must regulate them if it concludes that they endanger public health or the environment.[12] Still, if the Bush administration remains committed to doing nothing it can probably stall regulation for its remaining time in office and almost surely can adopt weak ineffectual regulation.[13] The public, however, seems to have interpreted Massachusetts v. EPA as lending the Court's prestige to the goal of meaningfully addressing climate change, so that federal climate change law seems inevitable,[14] at least once President Bush leaves office.

A number of bills pending in Congress address climate change and use the emissions trading approach that has dominated Kyoto implementation.[15] Emissions trading builds on a performance standard in that it requires government to pass laws quantitatively limiting the emissions of polluters.[16] But under a trading approach polluters can forego local compliance if they purchase extra emission reductions from elsewhere.[17] Of course, an emissions trading program, like a performance standard, only stands a chance of working well if the government establishing the underlying performance standard addresses the old legal question of how strict limits should be in a credible manner.[18] The Congressional bills vary in how strict the underlying emissions limits are, as shown in figure one *(see opposite page)*.[19]

A few of the Congressional bills are quite ambitious, with one of them demanding an 80% reduction in greenhouse gas emissions below 1990 levels by 2050.[20] Unfortunately, many of them are terribly inadequate.

A technical legal feature of the McCain-Lieberman bill (named for Republican Presidential con-

8 See Driesen, David M., Free Lunch or Cheap Fix?: The Emissions Trading Idea and the Climate Change Convention, 26 Bost. Coll. Envt'l Aff. L. Rev. 1, 1998, pp. 11-12 (linking the principle of common but differentiated responsibilities to the expectation that developed countries would likely make earlier cuts in greenhouse gas emissions); Bodansky, supra note 6, at p. 502 (explaining that the common but differentiated responsibilities principle in the Framework Convention reflects developing country charges regarding developed countries' historic responsibility for climate change and developed countries' recognition of their superior technological capability).

9 See U.S. Law, supra note 1, at pp. 7, 19.

10 127 S.Ct. 1438 (2007).

11 Id. at 1460 (finding that the text of the Clean Air Act shows that greenhouse gases are pollutants).

12 Id. at 1462 (stating that EPA must regulate greenhouse gases if it finds they contribute to global warming).

13 See id. (stating that EPA may delay regulation it if offers a reasonable explanation why it cannot determine whether greenhouse gases contribute to global warming and has "wide discretion" regarding the regulation's timing and content). Furthermore, because no statutory deadline exists for EPA action on global warming, the legal remedy available for inaction is a suit for "unreasonable delay." See id. at 1472 (Scalia, J. dissenting) (discussing the lack of a statutory deadline).

14 See Smith, Jeffrey A., Massachusetts v. EPA: The Way Forward on Climate Change Regulation in the U.S., 3 Envtl. Liability 2007, p. 127, at p. 127 (noting that climate change skeptics recognized that Mass. v. EPA made federal climate change legislation "all but inevitable.").

15 See Parker, Larry & Yacobucci, Brent D., Cong, Research Serv., RL 33846, Climate Change: Greenhouse Gas Reduction Bill in the 110th Congress 4 (2007); Berlin, Ken & Sussman, Robert M., Global Warming and the Future of Coal, The Path to Carbon Capture and Storage pp. 30-31 (2007), available at http://www.americanprogress.org (reviewing "cap and trade" bills pending in Congress as of May, 2007); Dernbach, John C., United States Policy, in U.S. Law, supra note 1, at pp. 85-90 (providing a slightly older but more analytical review of Congressional proposals).

16 See Driesen, David M., Is Emissions Trading an Economic Incentive Program: Replacing the Command and Control/ Economic Incentive Dichotomy, 55 Wash. & Lee L. Rev. 1998, p. 289, at p. 324.

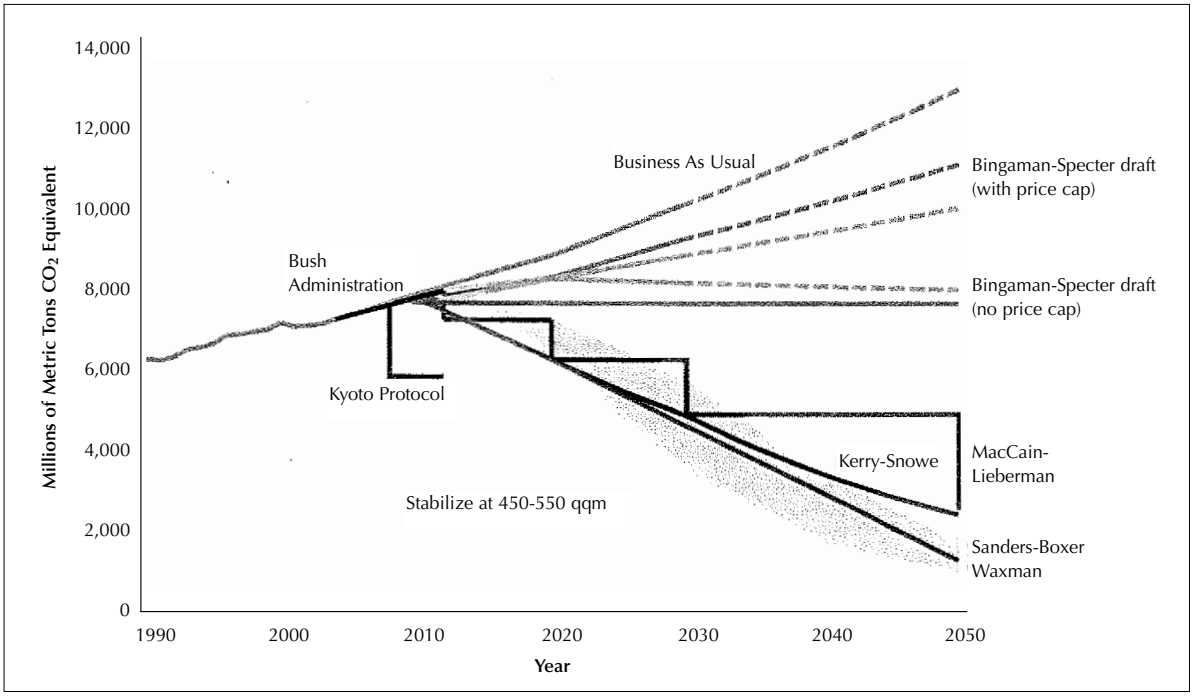
17 See id. at p. 312 (providing a simple example).

18 C.f. France Haggles over Banking Rules as Second NAP Set to Miss Deadline, Point Carbon (June 15, 2006), available at http://www.pointcarbon.com/article16056-868.html?articleID=16056&categoryID= (mentioning a French industry's advocacy of a high phase two cap); Grubb, Michael et al., Allowance Allocation in the European Emissions Trading Scheme: A Commentary, 5 Climate Pol'y 2005, p. 127, at pp. 132-33. (describing industry lobbying's contribution to the EU's overallocation of phase one emission allowances); Michaelowa, Axel & Butzengeiger, Sonja, EU Emissions Trading: Navigating Between Scylla and Charybdis, 5 Climate Pol'y 2005, p. 1, at p. 5 (explaining how lobbying in the EU lead to goals in phase one providing little departure from "business as usual" levels of carbon emissions).

19 Berlin & Sussman, supra note 15, at p. 31.

20 S. 3698, 109th Cong., § 702(2) (2006)

Figure 1: Comparison of economy-wide climate change proposals in 110th congress 1990-2050



Dotted lines indicate extrapolations of Energy Information Administartion projections. Modified May 10, 2007.
Source: World resources Institute.

tender John McCain and Connecticut Senator Joseph Lieberman) may merit international attention.[21] That bill contains within it the seeds of a better approach to climate change than we have used hitherto, because it relies in part on a Dirty Input Limit (DIL).[22] A DIL limits the inputs that cause pollution, rather than the harder to measure and more numerous outputs. Because measurement and regulation of carbon dioxide outputs from transportation sources is so difficult administratively, McCain-Lieberman may limit the amount of fossil fuel that can be used in the transport sector.[23] It is conceived of as an upstream emissions trading program, because it gives fossil fuel producers and importers allowances reflecting the carbon content of their fuels, rather than regulating drivers' carbon outputs, and authorizes the trading of these allowances. But it will, if enacted, constrict use of fossil fuels, thereby encouraging substitute fuels and energy efficiency. In effect, it limits inputs, not just outputs. And it addresses transport emissions, which have been left out of the trading schemes enacted to date.[24] On the other hand, McCain-Lieberman uses an output-based emissions trading approach to address stationary sources,[25] like the European Union's Emissions Trading Scheme. Under this output-based approach carbon dioxide emitters must hold allowances for every unit of carbon dioxide released into the air,[26] but may trade allowances[27], either selling allowances if they emit less than they are allowed, or buying somebody else's emission reduction if they plan to emit carbon in excess of their allowances locally. This combination means that those who produce fossil fuels can escape limiting them if they purchase credits from those lowering emissions in other ways.[28] This flexibility will improve cost effectiveness, but may limit the impetus for the key technological innovations ultimately needed to address climate change.

21 Climate Stewardship and Innovation Act of 2007, S. 280, 110th Cong., First Sess. (2007).

22 See David M. Driesen & Amy Sinden, The Missing Instrument: Dirty Input Limits (forthcoming 2008).

23 See S. 280, supra note 21, §§ 121(a)(2),(b); 162(e)

24 See id. § 121(b).

25 See id. § 121(a)(1).

26 See id.

27 See id. § 141.

28 See § 141(b).

In a forthcoming article, Amy Sinden and I will argue that a DIL offers substantial advantages over an output-based approach. Suffice it to say for present purposes that the McCain-Lieberman bill takes seriously the legal questions of who needs to be regulated in order to adequately address an environmental problem and how to make regulation enforceable, not just the cost effectiveness of emissions trading. By paying attention to legal questions while still incorporating some of the learning from economics, it has proposed a significant legal improvement.

II. State Law

As Congress has enacted none of these bills, the most significant American law on climate change at the moment comes from the states,[29] especially the populous states of the northeastern region and California[30]. This law relies upon American federalism, which generally permits state autonomy in supplementing federal environmental protection.[31] Under the Supremacy clause of the United States Constitution, however, Congress may supersede state law.[32] And one of these programs raises a substantial preemption question.

1. California Law

California has provided international leadership in addressing vehicle emissions. The hybrid vehicles available for sale exist because California's Low Emissions Vehicle program contains sufficiently tough emission limits to make unconventional technologies viable.[33] California does not itself produce significant numbers of automobiles. But California, since the 1950s, has demanded that vehicles sold in its jurisdiction meet emission standards.[34] Congress generally authorized California to continue regulating vehicle emissions, even when it preempted other state regulation of vehicles in the 1970 Clean Air Act Amendments, the law that first established a significant federal role in addressing air pollution.[35]

Recently, California has used this authority to address vehicle carbon dioxide emissions. It has enacted standards that require, by 2030, a 33% reduction in new passenger vehicle carbon dioxide emissions and a 25% reduction in new light duty truck emissions.[36] These requirements might significantly advance global efforts to address global warming for a variety of reasons. First, California is a significant emitter of greenhouse gases by itself.[37] Second, under the Clean Air Act, other states may copy California standards, and 11 states representing 33% of U.S. greenhouse gas emissions have done so.[38] Third, the states adopting California standards probably provide a sufficiently large market to make it economical to produce vehicles complying with California standards for the entire United States, thereby realizing economies of scale.[39] Finally, other countries may adopt or build upon California standards.[40]

29 See Hodas, David, State Initiatives, in U.S. Law, supra note 1, at p. 351 (noting that 28 of the 50 states have completed "some sort of climate action plan."); Engel, Kirsten H., Mitigating Global Climate Change in the United States: A Regional Approach, 14 N.Y.U. Envtl. L. Rev. 54 (2005); Rabe, Barry G. et al., State Competition as a Source Driving Climate Change Mitigation, 14 N.Y.U. Envtl. L. Rev. 2005, p. 1.

30 Engel, Kirsten H., State and Local Climate Change Initiatives: What is Motivating State and Local Governments to Address a Global Problem and What Does this Say About Environmental Law, 38 Urban Lawyer 2006, p. 1015, at p. 1016 (characterizing California as a climate change leader, but with company, especially in the northeast). Cf. Engel, supra note 29, p. 54.

31 See, e.g., 42 U.S.C. § 7416. See generally Engel, Kirsten H., Harnessing the Benefits of Dynamic Federalism in Environmental Law, 56 Emory L. J. 2006, p. 159.

32 U.S. Const., Art. VI.

33 See Driesen, David M., Sustainable Development and Air Quality: The Need to Replace Basic Technologies with Cleaner Alternatives, 10 Buff. Envtl. L. J. 2003, p. 25, at pp. 48-49.

34 See Motor Vehicle Mfrs. Ass'n v. New York State Dep't of Envtl. Conservation, 17 F.3d 2nd Cir. 1994, p. 521, at p. 524 (noting that several states adopted emission standards with California as the leader).

35 See id. at p. 525.

36 California Air Resources Board (CARB), Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider Adoption of Regulations to Control Greenhouse Gas Emissions from Motor Vehicles vi, 2004.

37 See Wanless Eric et al., A Golden Opportunity: California's Solutions for global Warming 2, 2007, available at http://www.nrdc.org (showing California's emissions as greater than those of Mexico, France, and South Africa).

38 See Mathew Visick, The California Global Warming Solutions Act in 2006: California's Final Steps toward Comprehensive Greenhouse Gas Regulation, 13 Hastings West Northwest J. of Envtl. L. & Pol'y 2007, p. 249, at p. 252.

39 See Massachusetts v. EPA, 127 S. Ct. 2007, p. 1438, at p. 1452 (discussing the likelihood of U.S. standards being adopted abroad).

40 CARB, supra note 36, at p. ix (pointing out that other jurisdictions have often adopted "motor vehicle contros . . . pioneered in California"). Cf. IP/07/155 & MEMO/07/46 (Brussels 7 February 2007) (outlining a plan for EU legislation lowering vehicle emissions); COM(2007)(10) Commission Communication Results of the review of the Community Strategy to Reduce CO_2 Emissions from Cars (24 January 2007).

The automobile manufacturers, however, have claimed that federal law preempts these standards.[41] Since vehicle manufacturers are likely to comply with carbon dioxide output standards by improving vehicle energy efficiency, they have argued that these are really Corporate Average Fuel Economy (CAFE) standards in disguise.[42] And the federal energy law preempts state CAFE standards.[43] California characterizes its law as an air pollution regulation that it has the right to enact under the Clean Air Act.[44] The Supreme Court bolstered California's position on this when it held that carbon dioxide was a pollutant under the Clean Air Act.[45]

The California carbon dioxide standards show what government can accomplish when it declines to embrace economics as a religion, yet allows it to inform its decisions. The automobile manufacturers asked the California Air Resources Board (CARB) to allow them to comply with its standards by allowing them to purchase offset credits, i.e. emission reductions made without changing vehicle design. While this would obviously lower compliance costs, CARB rejected the request. It noted, correctly, that this efficiency maximizing approach would eliminate the incentive to significantly advance vehicle technology.[46] I have argued elsewhere that advancing fundamental technologies is important to the long-term effort to address climate change.[47] This advancement will frequently requires using expensive approaches that have the capacity to change technology over time. While such investments have substantial long-term payoffs, both in terms of increasing our capacity to address climate change and reducing the long-term costs of doing so, they frequently do not represent the least cost compliance options from a short-term perspective.[48] CARB, while taking care to maintain the incentives needed to advance technology for the long-term, did not neglect short-term efficiency considerations, as it did allow manufacturers to use a fleet-average approach to compliance, so that the vehicle fleet as a whole, rather than each vehicle, must comply.[49]

In 2005, Governor Swartzeneger of California issued an Executive Order demanding reduction of emissions to 1990 levels by the year 2020 and to 80% below 1990 levels by 2050.[50] In 2006, California passed the Global Warming Solutions Act, which requires state-wide reductions of overall carbon emission to 1990 levels by 2020.[51] California has just begun to implement this bill, but is expected to rely heavily upon a cap-and-trade approach. California has provided real leadership in addressing global warming.

2. The Northeast States Regional Greenhouse Gas Initiative (RGGI)

Ten northeastern states have agreed to a regional program limiting electric utility emissions in these states.[52] This program merits extended treatment here, because the program contains several significant legal innovations.

The program caps regional electric utility emissions through 2014 and then reduces those emissions to 10% below these levels by 2018,[53] sort of. I say sort of because this is a trading program, which allows utilities to purchase credits in lieu of local compliance.[54]

41 See Brief of Appellant, Michael J. Kenny, in Central Valley Chrysler-Plymouth v. Kenny, 2002 WL 32298115 (9th Cir.).

42 See 49 U.S.C. § 32902.

43 See 49 U.S.C. § 32919(a).

44 See Appellant's Brief, supra note 41.

45 See Massachusetts, 127 S. Ct. at p. 1459 (concluding that greenhouse gases are pollutants under the Clean Air Act).

46 See CARB, supra note 36, at p. vii (declining to "dilute" the technology-forcing character of LEV by allowing credits for non-vehicle related offsets).

47 See, e.g., Driesen, supra note 3, at ___ (discussing the positive spillovers associated with relatively expensive technological innovation).

48 See Driesen, David M., Design, Trading and Innovation, in Freeman, Jody & Kolstad, Charles (eds.), Moving to Markets in Environmental Regulation: Lessons from Twenty Years of Experience, 2007, pp. 438-443 (explaining innovation's value and why trading discourages high cost innovation, which may have substantial long-term value); Driesen, supra note 8, at 43 (pointing out that trading can create incentives to deploy traditional innovation abroad in lieu of domestic innovation).

49 See Cal. Code Regs., tit. 13, § 1961.1(a),(b) (2007).

50 Cal. Government Code § 12812.6 (west 2007) (electronic note).

51 Cal. Health & Safety Code §§ 38500-38597 (2007). See Wanless et al., supra note 37; Hodas, David, State Initiatives, in U.S. Law, supra note 1, at p. 352.

52 See Regional Greenhouse Gas Initiative (RGGI), Memorandum of Understanding (2005), available at http://www.rggi.org/ (hereinafter RGGI MOU); Note, The Compact Clause and the Regional Greenhouse Gas Initiative, 120 Harv. L. Rev. 2007, p. 1958, at pp. 1959-1960 (describing the political process establishing RGGI). These states are Maryland, Delaware, New Jersey, New York, Connecticut, Massachusetts, Rhode Island, Vermont, New Hampshire, and Maine.

53 Regional Greenhouse Gas initiative, Overview 1 (2005), available at, http://www.rggi.org.

54 See RGGI MOU, supra note 52, § 2.

This program, however, contains limits on the use of offsets, credits obtained from sources not subject to the RGGI cap. These limits reflect attention to legal considerations and improve the integrity of the program. In the past, when U.S. regulators have allowed the use of offsets, many of them have been fraudulent.[55] There are a lot of games polluters can play with offsets to avoid making real progress on air pollution control. Accordingly, RGGI limits offsets to 3.3% of reported emissions and requires two tons of carbon for every one ton of credit from offsets realized outside the region.[56] This discount for out-of-region credits reflects a balance between enforceability concerns and the theoretical efficiency possible through a geographically broad offset market, as RGGI regulators will have difficulty assuring the integrity of offsets reflecting activities in jurisdictions in which they have no regulatory power. RGGI also limits the types of offsets that will be recognized with an eye toward assuring the program's environmental integrity.[57] RGGI regulators, like their counterparts on the CDM board, will review project methodologies, thus learning from the international law on this.[58]

Furthermore, the RGGI states may auction off allowances on a large scale, which would constitute a significant advance, as previous programs have relied on offering allowances to free, a grandfathering approach. The RGGI agreement among the states requires that 25% of the allowances be "allocated for a consumer benefit or strategic energy purpose."[59] The regulatory agencies recognize that auctioning off 25% of the allowances would provide a fund for these general purposes.[60] Furthermore, New York, which is a large and influential state, has committed to auctioning 100% of its allowances and the other states may well follow suit.[61] With limited exceptions, the EU trading scheme (like the U.S. acid rain program), gave away allowances to polluters. This give-away provided windfall profits to polluters. The Northeastern states seem to have learned something from this experience. Economists have long recommended auctions to prevent windfall profits, improve efficiency, and raise revenue.

An early landmark law review article on emissions trading by Bruce Ackerman (Yale Law School) and Richard Stewart (New York University Law School) recommended the sale of allowances to raise money to boost enforcement and monitoring.[62] The RGGI states will decide individually precisely how to use auction revenue, although a joint regional operating authority will likely conduct the actual auctions. Some of these states may choose to devote all or part of this revenue to funding energy efficiency improvements.[63] This would lower the cost of the program to consumers and improve the political case for extending the program.

The RGGI program contains "price triggers," which reflect the exquisite cost sensitivity of the neoliberal United States. A price trigger relaxes compliance obligations if allowance prices go too high. In the past, we have implemented fairly ambitious measures without price triggers, notwithstanding arguments that they will prove too costly. Apparently, we did not believe these arguments or we believed that we should protect the environment and human health even if doing so proved costly. In the current political climate, however, a price trigger can assure regulated firms or skittish government officials that environmental measures won't prove too burdensome.

RGGI actually contains two price triggers. If allowances reach $7/ton, the program raises the limit on offset credits to 5% of total emissions and gives

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55 See Driesen, supra note n. 16, notes 120-127 and accompanying text (reviewing evidence and refuting defenses of bubbles' integrity in the economics literature); California Air Resources Board and United States Environmental Protection Agency, Phase III Rule Effectiveness Study of the Aerospace coating Industry 4 (1990) (finding that almost all large sources operating under a bubble are not achieving required reductions); Liroff, Richard A., Reforming Air Pollution Regulation: The Toil and Trouble of EPA's bubble 1986, pp. 62-67, 89-91. (providing examples); David Doniger, The Dark Side of the Bubble, 4 Envtl. F., July 1985, p. 33, at pp. 34-35 (same); Liroff, Richard A., Air Pollution Offsets: trading, Selling and Banking 1980, p. 22 (explaining that offsets can be a "meaningless paper game"). I use the term "fraudulent" here as a shorthand for a host of abuses that make offsets produce less reductions than planned or no real additional reductions, not in the technical legal sense of involving a deliberate attempt to deceive.

56 RGGI MOU, supra note 52, § 2F(2).

57 See Id. § 2(F)(1).

58 See id. § 2(F)(c)

59 Id. § 2(g)(1).

60 See generally Burtraw, Dallas et al., Auction Design for Selling CO2 Emission Allowances under the Regional Greenhouse Gas initiative: Phase One Research Report Draft 2 n. 1, May 25, 2007, available at http://www.rggi.org (linking the auction to the consumer benefit provision).

61 See id.

62 See Bruce A. Ackerman & Richard B. Stewart, Reforming Environmental Law: The Democratic Case for Market Incentives, 13 Col. J. Envtl. L. 1988, p. 171, at pp. 180-183.

63 See Burtraw et al., supra note 60, at p. 2 n. 1 (stating that states will use this revenue to fund energy efficiency improvements, reduce electricity rates, or fund clean energy).

full credit (instead of half credit) for offsets coming from outside the region.[64] At $10 a ton, various deadline extensions kick in and offsets can rise to 20% of total emissions.[65] Another area of interest constitutes the issue of set asides. RGGI authorizes its member states to set aside allowances for various purposes, such as encouraging renewable energy.[66] Economists tend to prefer complete reliance on an auction, and dislike set asides, because auctions are efficient in the sense that they allocate credits to their highest and best use. Unfortunately, incumbents facing expensive abatement possibilities seem likely to outbid others for allowances. This is not a bad thing, but the long-term goal of climate change should be to move the industry toward zero emissions, since greenhouse gases accumulate in the atmosphere and remain there so long. This goal might be better achieved by giving some allowances to those with zero emissions, perhaps in proportion to their share of electricity generation. They could then sell these allowances to those with expensive abatement options and get revenues that effectively subsidize zero emissions. Such an approach might encourage more investment in zero emission approaches than a direct subsidy, because it would signal that the only way to reliably obtain sufficient allowances would be to operate a zero emissions facility. This approach would have to be balanced against the objective of assuring a stable supply of electricity, most of which comes from coal-fired power plants at the moment. But policy considerations should enter in here. Efficiency should not be the sole goal of the system. Still, with or without appropriate set-asides, auctions constitute a significant advance, and appropriately draw on economic teachings.

64 RGGI MOU, supra note 52, § 2(F)(3); Regional Greenhouse Gas Initiative, Amendment to Memorandum of Understanding, § 4(a) (2006), available at http://www.rggi.org (hereinafter RGGI Amendment).

65 RGGI MOU, supra note 52, § 2(E)(2)(b); RGGI Amendment, § 5(a).

66 See Regional Greenhouse Gas Initiative Model Rule, § xx5.3(d),(e) (2007), available at http://www.rggi.org.

67 See Barry G. Rabe, Race to the Top: The Expanding Role of State Renewable Energy Standards, 7 Sust. Dev't L. & Pol'y 2007, p. 10, at p. 10 (23 states and the District of Columbia had renewable portfolio standards by mid-2007).

68 See Rabe, Barry G., Race to the Top: The Expanding Role of State Renewable Portfolio Standards v, 2006, p. 4 (stating that more than half of the U.S. population lives in states with a renewable portfolio standard and showing that these states include Texas, Illinois, New York, New Jersey, Pennsylvania, and California).

69 See Driesen, supra note 3, at ___; Mendonça, Miguel, Feed-In Tariffs: Accelerating the Development of Renewable energy xiv, 2007 (characterizing the "feed-in tariff" as the most successful policy instrument for stimulating low cost renewable energy deployment). See also Taylor, Margaret R., Rubin, Edward S. and Hounshell, David A., Regulation as the Mother of Invention: The Case of SO2 Control, 27 L. & Pol'y 2005, p. 348, at pp. 370 (the acid rain trading program stimulated less innovation that prior "command and control" regulation); David Popp, Pollution Control Innovations and the Clean Air Act of 1990, 22 J. Pol'y Analysis & Mgm't 2003, p. 641 (agreeing with this conclusion, but finding that trading did better at stimulating performance enhancing, rather than cost reducing, innovation).

70 See Driesen, Design, Trading, and Innovation, supra note 48, at pp. 440-443 (explaining why trading does not encourage expensive innovation). See also Driesen, David M. Does Emissions Trading Encourage Innovation?, 33 Envt'l L. Rep., 2003, p. 10094, pp. 10095-10106. I frame this conclusion in somewhat equivocal terms, because instrument choice is not the only factor relevant to stimulation of innovation. While emissions trading in principle discourages less high cost innovation than a performance standard of identical stringency and scope, stringent emissions trading can encourage innovation. A very stringent emissions trading standard would encourage more innovation than a very lax renewable portfolio standard. But absent great disparity in ambition, a renewable portfolio standard will systematically favor innovation more than a trading program. See Driesen, supra note 3, at ___ (explaining that narrow trading programs encourage more innovation than comparably designed broad trading programs).

71 See Dernbach, John C. et al., Stabilizing and then Reducing U.S. Energy Consumption: Legal and Policy Tools for Efficiency and Conservation, 37 Envt'l L. Rep. (Envt'l L. Inst.) 2007, p. 10003.

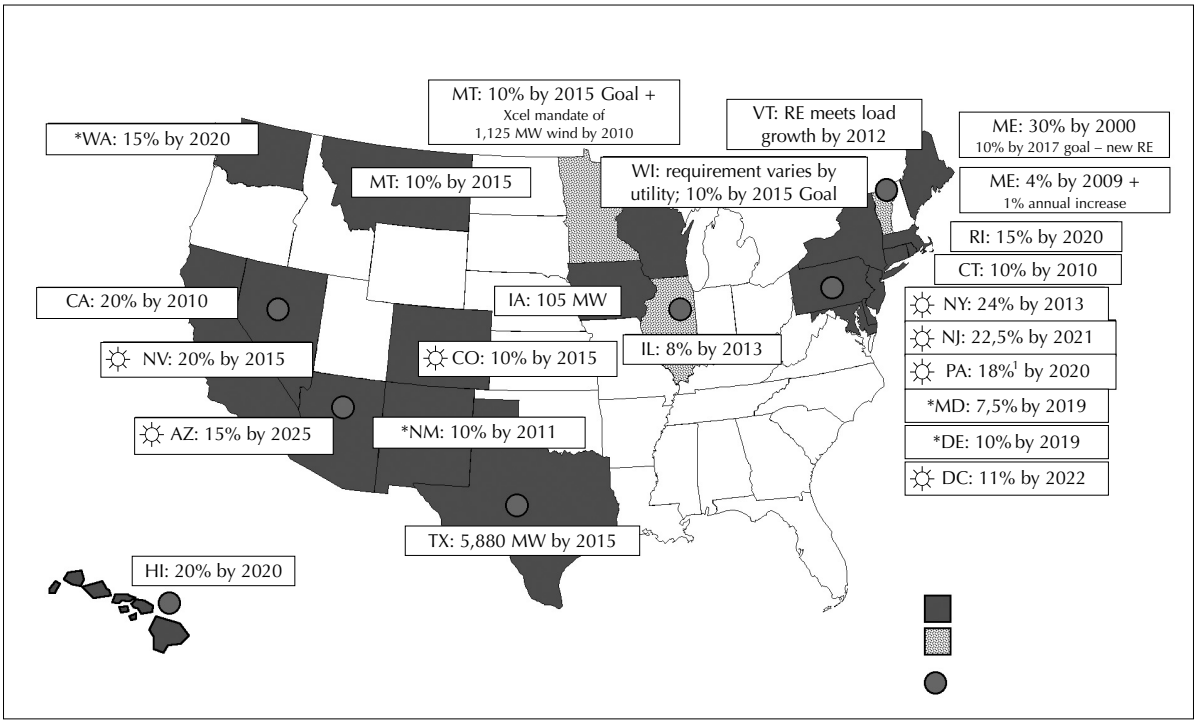
3. Renewable Portfolio Standards and Energy Efficiency

Twenty-three states and the District of Columbia enacted renewable portfolio standards by June of 2007, which require utilities to purchase fixed portions of renewable energy to meet customer demand.[67] While this includes less than half of the 50 states, it includes many of the most populous states with the largest utility carbon footprint.[68] The map *(see figure two on the next page)* shows the states with such standards and their targets.

While emissions trading has been touted as a great simulator of innovation, targeted renewable energy programs have proven far more effective at stimulating meaningful technological advances so far.[69] Renewably energy programs produce more meaningful innovation than trading, because renewables rarely provide the least cost method of producing power.[70] Therefore, programs that focus upon technological advancement are more likely to produce it than programs that focus on global efficiency, like emissions trading.

Energy efficiency measures also play a key role in addressing global warming.[71] Large progressive states like California and New York have tradition-

Figure 2: Renewable Portfolio Standards and Energy Targets in 23 States and the District of Columbia



ally addressed energy efficiency through least cost planning.[72] Under this model, utility regulators required utilities to match supply and demand using the least cost option, whether that option increases supply (i.e. building a new power plant) or reduces demand (e.g. paying for end-use energy efficiency).[73] This approach tends to favor energy efficiency, as energy efficiency measures almost always cost less then capacity increases.[74] While this model depends heavily on economic efficiency principles it also reflects a decidedly non-worshipful posture toward markets.[75] It recognizes that left to their own devices utilities tend to look at electricity as a commodity and may address the possibility of demand exceeding supply uneconomically by increasing supply.[76] It demands that regulators insist on efficient approaches even when key market actors might choose the least efficient solutions.[77]

Prior to deregulation, utilities in a number of cases cooperated in least cost planning regimes. Since state utility regulators would build the cost of either demand-side or supply-side measures into the rate base, utilities sufficiently flexible to engage in provision of energy efficient technology did not see any business reason to oppose the programs. Deregulation, however, converted the electricity market into more of a conventional commodities market, creating incentives for power plants to sell as much electricity as possible.[78] State budgets for energy efficiency generally declined during this

72 See Cavanagh, Ralph C., Least Cost Planning Alternatives for Electric Utilities and Their Regulators, 10 Harv. Envt'l. L. rev. 1986, p. 229.

73 See id.; Cavanagh, Ralph, Responsible Power Marketing in an Increasingly Competitive Era, 5 Yale J. Reg. 1988, p. 331, at p. 337 (defining least cost planning).

74 Id. at p. 315 (stating that energy efficiency should "fare well" if regulators must choose the least cost way of reconciling supply and demand); Cavanagh, supra note 72, at p. 333 (energy conservation "frequently" costs less than increasing supply).

75 See, e.g., Cavanagh, supra note 72, at pp. 318-320 (discussing market failures and disparities).

76 See id. at p. 302 (discussing costly errors in planning the construction of new power plants).

77 See id. at pp. 318-319 (discussing disparities between consumers' approach to evaluating conservation investments and utility evaluation of plant construction costs).

78 Swisher, Joel N. & McAlpin, Maria C., Environmental Impact of Electricity Deregulation, 31 Energy 2006, p. 1067, at p. 1078 (linking decreased spending on energy efficiency to competition, because deregulation encouraged additional electricity sales).

neoliberal period.[79] Deregulation, however, produced a huge price increase in California.[80] California responded by raising its energy efficiency expenditures to unprecedented levels.[81] Other states seem likely to follow suit, especially given the need for energy efficiency to help pay RGGI costs.

In this area, the neoliberal perspective diverges from the teachings of experience that experts in energy law and policy have learned. By and large, neoclassical economics treats energy efficiency as a problem in getting the price right. If prices are raised to the point where energy efficiency will be economic, we will get energy efficiency. Experienced energy experts, however, often disagree. The price for energy efficiency has been right for some time; a lot of it is available at zero net costs.[82] Yet, consumers have not gone out and picked up all of the dollar bills sitting on the sidewalk (to borrow the economists' metaphor to justify their faith on this matter).[83] If the energy experts are correct, it follows that emissions trading, which creates a price for carbon, will not be the key to realizing energy efficiency improvements. More likely, energy efficiency improvements will come from information programs to make consumers and businesses aware of the environmentally valuable economic opportunities available and some government standard setting for energy efficiency.[84] Furthermore, for technical reasons, incorporating energy efficiency into a trading program is extremely awkward and may actually result in lost emission reductions.[85]

III. Where are We Headed?

The failure of the United States to seriously address climate change has disappointed many of its allies and impeded chances for adequate global agreements. Because the United States has been the world's leading greenhouse gas emitter for some time, many countries have an interest in knowing where the United States is going on this issue.

The analysis thus far suggests that this question is complex because the United States consists of a large number of important political subunits, many of which have their own climate change policies. This article has not even mentioned the numerous local and city governments that have committed to meeting Kyoto targets locally, primarily through energy efficiency measures.[86]

There are grounds for hope that the United States' federal government will, in the near future, resume its former position as a reasonably responsible international actor with respect to this issue. Many companies witnessing the growth of fragmented state and local law have become supportive of the idea of federal regulation addressing global warming.

Unfortunately, as the RGGI program's limited scope and late deadlines and California's Global Warming's Solutions Act's numbers suggest, it's too late for the United States to reach its Kyoto targets on time. More importantly, there's real doubt about whether the United States and the rest of the world will act vigorously and quickly enough to avoid dangerous climate change in the post-Kyoto period. Most scientific estimates of the amount of reductions required to avoid many of the most serious climate change impacts envisions leveling off global

79 See id. at pp. 1071, 1073, 1077-78 (finding that demand side management spending and energy savings decreased with deregulation in many states).

80 See Goldstein, David B., Saving Energy: Growing Jobs, 2007, pp. 135-153 (explaining the link between deregulation and California's electricity shortage); Woo, Chi Keung, What Went Wrong in California's Electricity Market, 26 Energy 747 (2001) (discussing the California price spike and its causes).

81 See Goldstein, supra note 80, at pp. 150-151 (discussing how huge increases in efficiency funding and new standards helped address the California crises); Vine, E., Rhee, C.H. & Lee, K.D., Measurement and Evaluation of Energy Efficiency Reforms: California and South Korea, 31 Energy 2006, p. 1100, at pp. 1106-1107 (explaining that policy-makers provided a 250% increase in funding for energy efficiency unparalleled in U.S. history in response to an energy supply shortfall under deregulation).

82 See Bryner, Gary C., Carbon Markets: Reducing Greenhouse Gas Emissions Through Emissions Trading, 17 Tul. Envtl. L. J., 2004, p. 267, at p. 271 (describing energy efficiency as a "no regrets" option).

83 See Aune, Margrethe, Energy Comes Home, 35 Energy Pol'y 2007, ___ (forthcoming) (arguing that home energy consumption does not conform to a rational economic actor model); Maréchal, Kevin, The Economics of Climate Change and the Change of Climate in Economics, 35 energy Pol'y ___, __-__ (2007) (forthcoming) (explaining that overwhelming evidence shows that consumers neglect cost saving energy efficiency); Goldstein, supra note 80, at pp. 154-172 (discussing reasons that markets do not produce cost effective energy efficiency). See, e.g. Linden, Anna-Lise, Carlsson-Kanyama, Annika, Eriksson, Bjorn, Efficient and Inefficient Aspects of Residential Energy Behavior: What are the Policy Instruments for Change, 34 Energy Pol'y 2006, p. 1918, at p. 1923 (noting that Swedish apartment dwellers keep their dwellings hotter than homeowners, because the homeowners bear the incremental cost of additional energy use, but the apartment dwellers do not).

84 See generally Dernbach, John C. et al., supra note 71.

85 See Driesen, supra note 3, at ___, n. __ (discussing additionality problems with energy efficiency for offsets).

86 Cf., Healy, J. Kevin, Local Initiatives, in U.S. Law, supra note 1, at pp. 430-432 (stating that 320 mayors had pledged to at least meet Kyoto targets by October of 2006).

emissions in the near term and reducing emissions to more than 50% below 1990 levels globally by 2050.[87] Because it will not be possible to fairly demand that rapidly growing countries like China and India reduce emissions until after developed countries deliver substantial reductions, developed country emissions will have to fall by much more than 50% by 2050. Such numbers are daunting, especially for a country that has unwisely postponed serious efforts.

Many environmental law experts who believe that the United States will act fairly soon remain concerned. In the past, U.S. regulatory programs of the scope necessary to address global warming have proceeded haltingly and slowly. Even in the years before neoliberalism's ascendancy, special interest opposition, the complexity of administrative law, and the technical complexity of the underlying problems led the law to fall seriously short of its ambitions.[88] Doing much better than we have in the past presents a profound legal challenge. We see already some institutional changes that might help. RGGI has produced an unusually close collaboration between energy and environmental regulators, who sometimes work separately on the same problems. While some of the bills in Congress leave too many decisions to EPA, some of them reflect their sponsors' willingness to have Congress itself decide key questions about the scope and timing of reductions, thereby following the model of the successful programs addressing acid rain and ozone depletion.[89] While these developments are positive, we will need great legal ingenuity to produce the rapid and significant changes that we will need to adequately address global warming.

At the moment, the United States' stance toward international negotiations has softened in tone if not in substance. As the United States moves toward addressing climate change domestically, it will become more cooperative in international negotiations. The inability of the United States to achieve Kyoto targets may, however, make it awkward for the United States to play a leadership role. During President Bush's remaining time in office U.S. agreement to binding mass-based caps remain unlikely. After he leaves office, however, a new President will shape the U.S. position on global climate change.

IV. Conclusion

Economics will continue to inform United States climate change policy. But law too has a role to play. Economics can inform law, but at this point, efficacy, not efficiency, must be the main goal.

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87 See Hansen, James E., A Slippery Slope: How Much Global Warming Constitutes "Dangerous Anthropogenic Interference, 68 Climate Change, 2005, p. 269, at p. 277 (stating that a 2°C temperature rise "almost surely takes us well into the realm of dangerous" climate change); Meinshausen, Malte, What Does a 2°C Target Mean for Greenhouse Gas Concentrations? A Brief Analysis Based on Multi-Gas Emission Pathways and Several Climate Sensitivity Uncertainty Estimates, in Schellnhuber, Hans Joachim et al. (eds.) Avoiding Dangerous Climate Change, 2006, pp. 269-270, (estimating that limiting temperature rise to less than 2°C likely requires a 55% reduction below 1990 emission levels by 2050).

88 See generally Driesen, David M., The Economic Dynamics of Environmental Law 200, pp. 3112-3119; McGarity, Thomas O., Some Thoughts on Deossifying the Rulemaking Process, 41 Duke L. J. 1992, p. 1385.

89 See, e.g, S. 280, supra note 21, § 124.